UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/840,795	04/23/2001	Erin E. Murphy	SF0818KQ	5250

28008 7590 07/01/2005

DNAX RESEARCH, INC.
LEGAL DEPARTMENT
901 CALIFORNIA AVENUE
PALO ALTO, CA 94304

EXAMINER	
O HARA, EILEEN B	
ART UNIT	**PAPER NUMBER**
1646	

DATE MAILED: 07/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/840,795	MURPHY ET AL.	
	Examiner	Art Unit	
	Eileen O'Hara	1646	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 March 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *11-15 and 21-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-15 and 21-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims Status

1. Claims 11-15 and 21-23 are pending in the instant application. Claims 11 and 12 have been amended and claim 23 added as requested by Applicant in the Paper filed March 30, 2005.

All claims are currently under examination.

Withdrawn Rejections

2. The rejection of claims under 35 USC §§ 102 and 103 are withdrawn, due to the determination that the effective priority date of Goddard et al. was April, 12, 2000, and not April 12, 1999.

Advisory Information

3. The claims are interpreted in that the fragment of the antibody must also specifically bind to the protein of SEQ ID NO: 17. If Applicants intend otherwise this should be communicated in the next response.

New Rejections

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 23 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 23 is indefinite because it encompasses binding compounds which bind to a protein encoded by SEQ ID NO: 17, and SEQ ID NO: 17 is a polypeptide, which would not encode a protein.

Maintained Rejections

Claim Rejections - 35 USC § 101 and § 112

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 11-15, 21 and 22 remain rejected, and new claim 23 is rejected under 35 U.S.C. §§ 101 and 112 because the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility, for reasons of record in the previous Office Actions, Paper No. 8, at pages 4-7, Paper No. 13 at pages 3-8, the Paper mailed March 9, 2004 at pages 2-6, the Advisory Action mailed June 21, 2004, the Paper mailed Nov. 30, 2004 at pages 5-8, and below.

Applicants traverse the rejection and assert on pages 4-6 of the response that the objective evidence demonstrating the sufficiency of all of the disclosed utilities for RANKL has not been addressed, and specifically contains no reference to or acknowledgement of the post-filing publication of Sinha and Chaudhaury. Applicants submit that Sinha demonstrates a second disclosed utility for RANKL (named X-linked extodermal dysplasia receptor (XEDAR) in that

paper), *i.e.*, the induction of apoptosis, and that the instant application specifically discloses RANKL as a regulator of cell proliferation or development (specification at page 32), cites the ability to induce apoptosis, affect differentiation, and cause changes in cytokine expression as specific examples of regulating cellular proliferation. Applicants assert that the RANKL specific antibodies may be useful in the treatment of diseases associated with abnormal proliferation including cancerous conditions and degenerative conditions, and that the work of Sinha confirms the specific, substantial and credible utility for RANKL as a protein that regulates cell proliferation and thus useful in conditions associated with abnormal proliferation as disclosed in the specification.

Applicants' arguments have been fully considered but are not deemed persuasive. The Sinha paper demonstrates that RANKL (XEDAR) does induce apoptosis in response to its ligand, EDA-A2, however "induction of apoptosis" is not considered a specific and substantial utility absent any other information. Similarly, a general "regulation of cell proliferation or development" is not considered a specific and substantial utility absent any other information. The Sinha paper demonstrates that RANKL is a receptor found in ectodermal tissue and is apparently involved in muscle and other ectodermal development, which was not envisioned in the specification. Many of the receptors in the TNF receptor family induce apoptosis, and are involved in cell proliferation and/or development. The stated utilities in the specification, ability to kill cells, affect differentiation and cause changes in cytokine expression, are general activities based on the receptor being in the TNF receptor family, which commonly share these activities. However, the receptors in the TNFR family are cell-type or tissue specific, have different ligand specificities and interact with different adaptor proteins during signaling, and perform different

biological functions, as evidenced by the Sinha paper and the Wallach reference, cited in the office action mailed August 8, 2003.

Also argued on page 5 of the response is that the Examiner appears to suggest that the data must show how RANKL is functioning, but such is not the standard, and cites MPEP § 2107 and *In re Brana*. The function of a protein does not necessarily need to be known patentable, but it must have some specific and substantial utility. For example, a protein may be over-expressed in some type of cancer – a utility for that protein could be as a cancer marker, and therefore antibodies to the protein would have the same utility. This has not been demonstrated in the present instance. Applicants submit that the specification discloses that RANKL as useful in modulating a specific disease, i.e., inflammation, which is a recognized disease and the demonstration of its role with the TaqMan® data provided by Dr. Mattson confirms its credibility. However, although RANKL mRNA is significantly increased in a primate model from idiopathic pulmonary fibrosis, a lymphocyte mediated disease state, and in lung C. Macaque 24 hours post-*Ascaris* challenge, it is not increased in other inflammation states (lung pneummonitis, or even in lung idiopathic pulmonary fibrosis pool). It is not clear why the transcript would be elevated in some samples demonstrating lung inflammation and not others. Applicants' arguments that the specification specifically identifies a utility that is supported by the data and the declaration, in that the RANK-like protein (RANKL) is involved in the regulation and development of lymphocytes, and thus diseases associated with lymphocyte regulation and development, has been considered but not found persuasive. Simply finding that its transcript is elevated in some samples of inflammation does not provide information on how the protein is actually functioning. Although it may be associated with inflammation somehow,

there is no information how it is involved – causing inflammation, or resulting from inflammation.

For these reasons and those discussed in the previous office actions, the rejection is maintained.

It is believed that all pertinent arguments have been answered.

Conclusion

6. No claim is allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eileen B. O'Hara, whose telephone number is (571) 272-0878. The examiner can normally be reached on Monday through Friday from 10:00 AM to 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Caputa can be reached at (571) 272-0829.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (571) 272-1600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://portal.uspto.gov/external/portal/pair. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

Eileen B. O'Hara, Ph.D.

Patent Examiner